3.3.2.3 Pine Barrens

3.3.2.3.1 Community Overview

This savanna community is typically characterized by scattered jack pines, or less commonly, red pines, sometimes mixed with scrubby Hill's and bur oaks. The scattered trees or groves are interspersed with openings in which shrubs such as hazelnuts (*Corylus americana* and *C. cornuta*) sand cherry, and prairie willow are prominent, along with prairie grasses and forbs. The groundlayer often contains species characteristic of "heaths", such as blueberries (*Vaccinium angustifolium* and *V. myrtilloides*), bearberry, and sweet fern. Other characteristic plants include dry sand prairie species such as june grass, little bluestem, silky and azure asters (*Aster sericeus* and *A. oolentangiensis*), lupine, blazing-stars (*Liatris aspera* and *L. cylindracea*), and western sunflower. Pines may now be infrequent, even absent, in some stands in northern Wisconsin and elsewhere because of past logging, altered fire regimes, and an absence of seed source. In extreme cases, the pines have been virtually eliminated and oak sprouts and shrubs are now the dominant woody species.

The pine and oak barrens communities described by Curtis (1959) share many similarities. In general, there is a loss in the number and abundance of prairie species from south to north, and pine was more characteristic of the northern stands. However, jack pine is an important component of some of Wisconsin's southernmost barrens occurrences (e.g., Gotham Jack Pines on the Wisconsin River in Richland County), and both red pine savanna and jack pine barrens were described in the Public Land Survey notes for Juneau County in central Wisconsin. Maintaining pine in some of the managed stands has been challenging for managers. Frequent fires can cause the local elimination of species like the pines that don't have the ability to send up root sprouts. Also, in some parts of Wisconsin, jack pine does not have serotinal cones, which open under the intense heat generated by wildfire, and can then reseed burned areas in which the adult pines have been killed.

The pine barrens community occurs on landforms that include outwash plains, glacial lakeplains, and broad sandy terraces that flank some of the major rivers of southern Wisconsin. Soils are almost always dry and sandy, of low nutrient status, and in topography that is often nearly level, but can be gently rolling. Similar communities include oak barrens, bracken grassland, sand prairie, northern dry forest, Central Sands pine - oak forest, and bedrock glade.

3.3.2.3.2 Vertebrate Species of Greatest Conservation Need Associated with Pine Barrens

Twenty-eight vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with pine barrens (Table 3-75).

Table 3-75. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with pine barrens communities.

Species Significantly Associated with Pine Barrens
Birds
Sharp-Tailed Grouse
Brown Thrasher
Kirtland's Warbler
Vesper Sparrow
Herptiles
Boreal Chorus Frog
Wood Turtle
Blanding's Turtle
Western Slender Glass Lizard
Northern Prairie Skink
Bullsnake
Eastern Massasauga Rattlesnake
Mammals
Franklin's Ground Squirrel
Species Moderately Associated with Pine Barrens
Birds
Northern Harrier
Upland Sandpiper
Black-billed Cuckoo
Whip-poor-will
Connecticut Warbler
Field Sparrow
Lark Sparrow
Red Crossbill
Herptiles
Yellow-bellied Racer
Mammals
Gray Wolf

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-75 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both pine barrens and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of pine barrens in each of the Ecological Landscapes (Tables 3-76 and 3-77).

- Using the analysis described above, a species was further selected if it had both a significant association with pine barrens and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of pine barrens. These species are shown in Figure 3-11.

Table 3-76. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with pine barrens communities and their association with Ecological Landscapes that support pine barrens.

Pine Barrens	Birds (4)*				Herptiles (7)							Mammals (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Sharp-tailed Grouse	Brown Thrasher	Kirtland's Warbler	Vesper Sparrow	Boreal Chorus Frog	Wood Turtle	Blanding's Turtle	Western Slender Glass Lizard	Northern Prairie Skink	Bullsnake	Eastern Massasauga Rattlesnake	Franklin's Ground Squirrel
MAJOR												
Central Sand Plains	M	H		H		H	H	H		M	M	H
Northeast Sands	M	H		H		H	M					
Northwest Sands	H	H		H	H	H	H		H	H		H
IMPORTANT												
Central Sand Hills		H		H			H	H		M		H
Western Coulee and Ridges		H		H		H	H	H	H	H	H	M
PRESENT (MINOR)												
Northern Highland		H		H		H						

Color Key

H = HIGH probability the species occurs in this Ecological Landscape

M = MODERATE probability the species occurs in this Ecological Landscape

= LOW or NO probability the species occurs in this Ecological Landscape

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-77. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with pine barrens communities and their association with Ecological Landscapes that support pine barrens.

Pine Barrens	Birds (8)*								Herptiles (1)	Mammals (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Northern Harrier	Upland Sandpiper	Black-billed Cuckoo	Whip-poor-will	Connecticut Warbler	Field Sparrow	Lark Sparrow	Red Crossbill	Yellow-bellied Racer	Gray Wolf
MAJOR										
Central Sand Plains	■	■	■	■	■	■	■	■	■	■
Northeast Sands	■	■	■	■		■	■	■		■
Northwest Sands	■	■	■	■	■	■		■		■
IMPORTANT										
Central Sand Hills	■	■	■	■		■	■	■	■	■
Western Coulee and Ridges	■	■	■	■		■	■		■	
PRESENT (MINOR)										
Northern Highland	■			■	■	■		■		■

Color Key

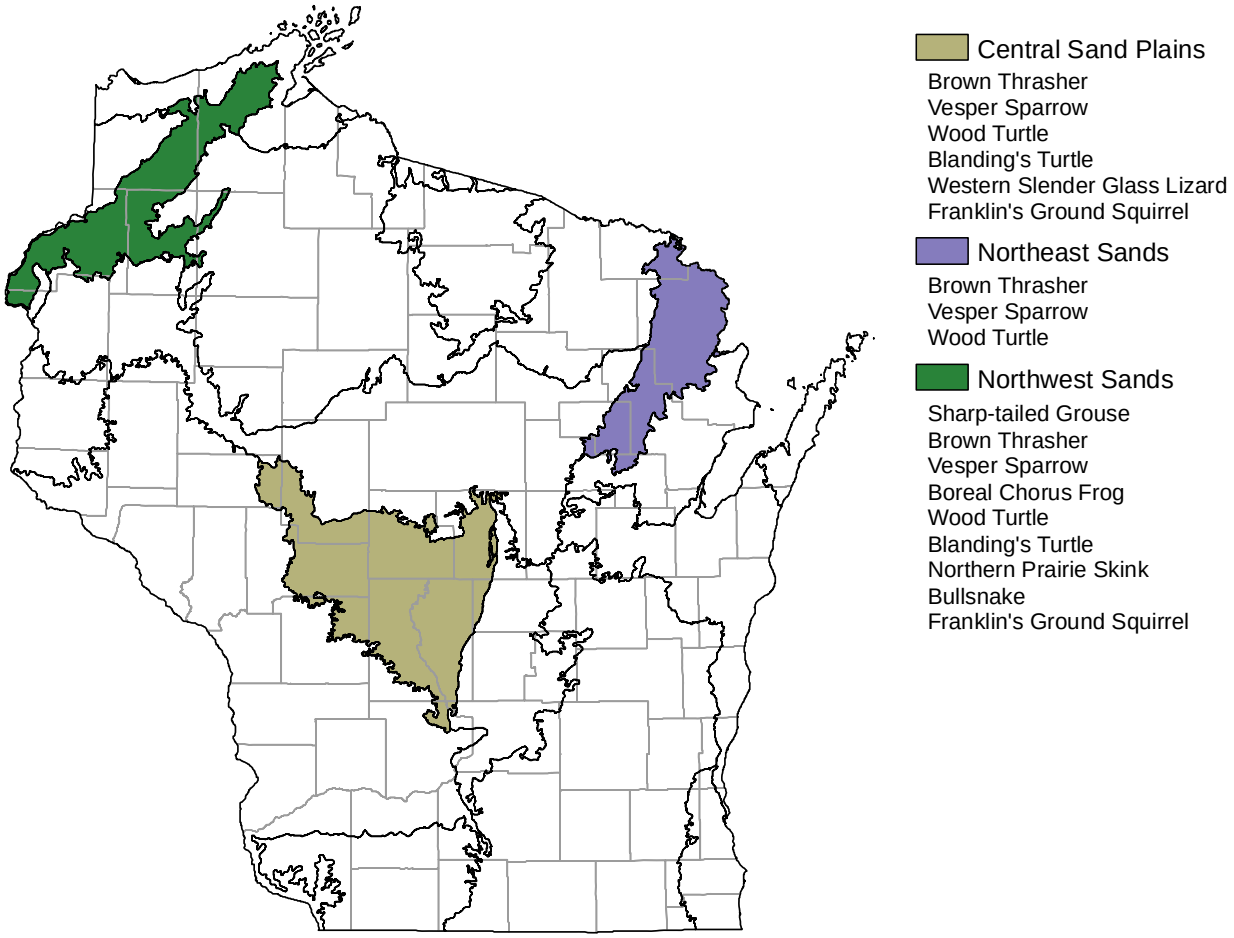
■ = HIGH probability the species occurs in this Ecological Landscape

■ = MODERATE probability the species occurs in this Ecological Landscape

□ = LOW or NO probability the species occurs in this Ecological Landscape

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-11. Vertebrate Species of Greatest Conservation Need that have ***both* a significant association with pine barrens ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of pine barrens.**



3.3.2.3.3 Threats and Priority Conservation Actions for Pine Barrens

3.3.2.3.3.1 Statewide Overview of Threats and Priority Conservation Actions for Pine Barrens

The following list of threats and priority conservation actions were identified for pine barrens in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.2.3.3.2 unless otherwise indicated.

Threats and Issues

- Some existing sites are small, overgrown with woody vegetation, and isolated. Small patch size may be a problem for some species; research is needed on the appropriate range of sizes needed to maintain all barrens species.
- Current composition and structure does not reflect the wide range of natural variability of this type, which includes pine savanna, or a patchy distribution of barrens intermingled with otheropen lands which gradually transition into forests.
- Lack of fire allows conversion to forest; too much burning may result in simplification and the elimination of some species (e.g., pines).
- Invasive plants such as spotted knapweed and exotic spurges are an existing serious threat.
- Grazing by cattle and high deer densities can diminish or eliminate understory plants.
- Rural housing and exurban development fragments restorable stands and makes the use of prescribed fire problematic.
- Conversion to pine plantations is a significant threat in some places. Conflicts sometimes exist with forest or grassland objectives.
- Dense pine plantations can eliminate ground layer plants and produce ideal conditions for episodic jack pine budworm outbreaks.
- There is a need for additional inventory data on restorable sites.
- More information is needed to learn how to manage for the full range of natural variability associated with this community type.
- "Savannas", characterized by widely scattered large trees, are under-represented in our managed barrens.
- ATV's and other motorized vehicles can damage fragile habitat.
- Dense sods of Pennsylvania sedge dominate the groundlayers of many former barrens sites from which fire has been excluded, and plant diversity in such sites is currently very low.

Priority Conservation Actions

- This complex of community types is globally rare. Conservation will depend largely on restoration, and Wisconsin has some of the best opportunities in North America.
- Research on restoration techniques is needed, and should be applied where appropriate.
- Identify locations where restorable sites exist. Limit additional development on and around restorable sites to maintain management options.
- Active management is required to maintain the type. Manage in the context of dry forest and savanna in a gradient from forest to native or surrogate grassland. Use surrogate habitat following logging to buffer barrens openings, allow for species dispersal, and connect existing habitat. Manage this type as a moving mosaic of habitat.
- Encourage use of prescribed fire to maintain this community complex. Develop educational tools and demonstration areas that promote the benefits of prescribed fire, and address liability concerns. Mechanical brushing and some forestry practices are compatible with maintaining this type, especially where the use of fire is difficult or impossible. Follow existing WDNR screening guidance to minimize impacts on sensitive species.

- Develop a practical "toolkit" for maintaining the structure and composition characteristic of barrens ecosystems.
- Reduce deer density.
- Restrict ATV use in sensitive areas.
- Continue and support research to find biocontrols for invasives; control the spread of new invasives.

3.3.2.3.3.2 Additional Considerations for Pine Barrens by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of the pine barrens exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for pine barrens found in Section 3.3.2.3.3.1.

Additional Considerations for Pine Barrens in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management

Central Sand Plains

The large public land base in the Central Sand Plains Ecological Landscape can be used to accomplish barrens restoration and management objectives. Opportunities to develop partnerships with private groups should be explored and fostered. Restoration and management efforts are underway at Necedah National Wildlife Refuge (Juneau County), Bauer-Brockway Barrens (Jackson County Forest), Quincy Bluff and Wetlands State Natural Area (Adams County), and Sandhill State Wildlife Area (Wood County). There are legitimate restoration opportunities on the Black River State Forest (Jackson County).

Northeast Sands

Many sites in this Ecological Landscape are similar to bracken grasslands, though they do contain prairie elements. Spread Eagle Barrens State Natural Area (Florence County), Athelstane Barrens (Marinette County), and Dunbar Barrens (Marinette County) contain examples of this type.

Northwest Sands

The globally rare pine barrens community is better represented in the Northwest Sands than in any other Ecological Landscape, and offers the best opportunities in the State for managing this type. This type should be managed in large habitat blocks where possible. Restoration efforts now include projects on county, state, and federal lands in Polk, Burnett, Douglas, and Bayfield counties. An important issue is connecting these scattered openings, at least periodically, to reduce the negative impacts of population isolation. The extensive areas of public land may make it possible to connect existing critical protected areas by using semi-natural landscapes (e.g., a combination of managed forests and abandoned farms) as connection corridors. Managing many thousands of acres in a mosaic of barrens, grasslands, wetlands and forests may be the best way to protect some species. Providing for the periodic movement of barrens-dependent species between some of the now-isolated patches is a key long-term management consideration, and could benefit many rare birds, herptiles, plants, butterflies, moths, and other invertebrates occurring in this Ecological Landscape. Opportunities to develop partnerships with private groups, including industrial forest landowners should be sought. Examples of this community are present at Crex Meadows State Wildlife Area (Burnett County), Namekagon Barrens (Burnett County), Solon

Springs Sharptail Barrens State Natural Area (Douglas County), Motts Ravine on the Brule River State Forest (Douglas County),and Moquah Barrens (Bayfield County).

Additional Considerations for Pine Barrens in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management

Central Sand Hills

Pine barrens are not well represented in this Ecological Landscape, but there are good opportunities for restoration at small to medium scales. Opportunities occur at Rocky Run Savanna State Natural Area (Columbia County) and Emmons Creek State Fishery Area (Portage County).

Western Coulees and Ridges

Excellent examples of oak barrens occur on Fort McCoy Military Reservation (Monroe County), including a pine component in some stands. There are some distinctive and important occurrences of barrens (that include jack pine) on the broad terraces bordering some of the major rivers in the Ecological Landscape, e.g., North Bend Bottoms State Wildlife Area (Jackson County), Trempealeau National Wildlife Refuge (Trempealeau County), and Nine Mile Island Savanna (Pepin County).